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Commelinantia, a new genus of the Commelinaceae

B. C. THARP

(WITH PLATES 10 AND 11)

Few if any families of plants have members in more urgent need of field study than are those of the family Commelinaceae. Their evanescent corollas, which it is difficult even to bring from field to laboratory without injury; the delicate shades of color which are lost in pressing; and their succulent stems, which shrink tremendously in drying, make field study imperative if one is to get any adequate idea of these delicate details as they appear in the growing plants. Since 1919 I have had abundant opportunity for field study of a very interesting member of the family, a species first described by Torrey* as *Tradescantia anomala* and latter transferred by C. B. Clarke† to the genus *Tinantia*, where it has remained to the present time.

Torrey's description, based upon specimens from Texas, (one of Wright's, and one of Thurber's), preserved in the herbarium of the New York Botanical Garden, is surprisingly good, considering that it was drawn wholly from dried material. Such details of general habit, sepals, petals (except color), filaments (except that of the posterior stamen), anthers, style, stigma, and ovules, as are pointed out, are correctly described. The greatest error into which his material led him seems to have been in considering the ovary and capsule two-celled. He also described the seeds as being "as in the rest of the genus," which is incorrect. The wonder is that, having examined his material so carefully as to be able to write such an accurate description, he could feel justified in assigning this species to the genus *Tradescantia*. That he was none too confident of its having been correctly assigned is abundantly testified by the specific name, by legends‡ on the sheets containing his specimens, and by his observation that "the species is intermediate between *Tradescantia* and *Commelyna.*"

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* U. S. and Mex. Bound. Bot. 225. 1859.

† DeCandolle, Monog. Phaner. **3**: 287, 1881.

‡ Wright's specimen is labelled "Wright, Texas, *Commelyna anomala*, Torr. *Tradescantia anomala* Torr.," the word "*Commelyna*" being stricken out. Thurber's specimen is labelled "Thurber, San Antonio Texas, May 1853. *Commelyna rhodantha*, Torr."

Clarke's description of *Tinantia anomala* appears to be based neither upon the excellent original by Torrey, nor upon any critical examination of material of the species. He characterizes the plant as glabrous, the leaves as ovate-cordate, the three longer stamens simply as "naked above," the three shorter as having "golden bearded anthers," the stems as "dichotomously branched," the inflorescence as being "almost included in the subcomplicate uppermost leaf," the petals as being "obovate-elliptic, bluish" (by inference all alike in size and appearance). With the exception of the capsule, the measurements of all structures are under-stated. His specimens may not have shown the basal linear-lanceolate, ciliate, leaves; his scant measurements may have been due to his materials having shrunken in drying, and his representation of the "uppermost leaf" as "subcomplicate" may have been due to his specimens having been somewhat wilted before being pressed; but there seems no valid excuse for so inaccurate a description of stamens, or for characterizing the stems as dichotomously branched, or for totally ignoring the description (excellent so far as it goes) of Torrey. His observation, concerning the relationship existing between the type species (*T. fugax*) and the other species, that "caeterae species . . . cum *T. fugace* . . . militant; et ad *Tinantiam* ex necessitate referendae sunt, nisi genus *Tinantia* ad *Tradescantiam* reducatur," seems to be in the nature of an apologetic attempt at justification, though it is difficult to see the logic in his statement.

My own experience with an abundance of fresh material of the species in question constrains me to call attention to the following characteristics, which keep it from being properly placed in the genus *Tinantia* as characterized by Clarke: branches which break through the leaf sheaths; flowers in a simple terminal scorpioid raceme subtended by a *single, broad, erect, flat, cordate, clasping spathe*; colored lateral petals much larger than the very small anterior white petal; stamens of four distinct kinds as regards size and pubescence.

The character of the stamens and of the spathe and the habit of the branches breaking through the leaf sheaths are sufficient to exclude it from either *Commelina* or *Tradescantia.* The former has difformed stamens, all of whose filaments are entirely glabrous and some of whose anthers are sterile; a spathe which is folded so as to protect alike the flowers bud and the ripening capsule, the flower being projected above the edges of the spathe only during the very brief period of bloom: the latter has stamens all alike in size and pubescence and all fertile; the inflorescence subtended by one or more (usually two) unlike bracts, never by a spathe. Neither *Commelina* nor *Tradescantia* has branches which break through the leaf sheaths. This habit, however, is held in common with certain tropical genera to which the species has never been heretofore compared. Dr. Pennell has kindly gone over the whole family as represented by specimens in the New York Botanical Garden Herbarium and reports the following genera as having this habit:

1. *Callisia* (tropical American) lacks spathe, has uniform petals and stamens.
2. *Campelia* (tropical American) has spathe, but uniform petals and stamens, white.
3. *Cyanotis* (tropical Asia) has series of overlapping spathes.
4. *Dichorisandra* (tropical American) lacks spathe, inflorescence a panicle.
5. *Floscopa* (tropical American and Asia) lacks spathe, inflorescence a panicle.
6. *Forrestia* (tropical Asia) lacks spathe, inflorescence congested erupts spathe.
7. *Pollia* (tropical Asia) lacks spathe, inflorescence a panicle.
8. *Sauvellea* (Cuba) has spathe, but petals and stamens uniform; repent.
9. *Streptolirion* (China) has spathe below cymes or panicle, but petals and stamens uniform, the filaments bearded. Stem twining.
10. *Tradescantella* (Florida) lacks spathe, but petals and stamens uniform. Repent.
11. *Zebrina* (tropical American) has two bracts below the congested inflorescence; petals uniform, at base approximating to form a corolla-tube. Repent.

The species differs from any of these generic groups in its combination of erect habit, single, flat, erect, spathe; unequal petals; and stamens of four forms.

In addition to the several genera listed above, Dr. Pennell finds that *Tradescantia Pringlei* S. Wats.* also has leaves which break through the sheathes. Moreover, it has the following additional characters which ally it very closely to *T. anomala*: general appearance very similar; inflorescence a simple scorpoid raceme (or frequently reduced to only one flower); stamens probably like those of *T. anomala* in that there are four kinds,

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*Trans. Am. Acad. **26**: 157. 1891.

implied by the following statement: "stamens 6, unequal, the longer with filiform filaments bearded in the middle (or one naked) and broadly oblong anthers, the shorter filaments densely bearded in the middle with green gland-tipped hairs, the anthers orbicular; anther cells contiguous." The stamen corresponding to the posterior stamen in *T. anomala* might, by casual examination, have been counted as being like the postero-lateral ones.

But *T. Pringlei* has the following characters in conflict with *T. anomala*: plant green, not glaucous; cauline leaves uniformly ovate, abruptly acuminate, none modified to form a definite "spathe" (though the slender peduncles of *T. Pringlei* frequently have one or more much reduced sheathes below the inflorescence), inflorescence axillary, petals uniform, all blue ("purple" ?). Though *T. Pringlei* thus shows such strong resemblance to *T. anomala* in certain characteristics, yet because of these important points of dissimilarity and because of insufficient material for critical study I feel constrained to be content with pointing to it as perhaps the closest existing relative of *T. anomala*, leaving the question of its assignment to the proper genus to be settled by a more critical study of more abundant material. Certainly it can not properly belong in the genus *Tradescantia*!

Confining my attention, therefore, in the present paper to the placing of *T. anomala*, it seems not only justifiable but necessary to make it the type of a new genus.* Following the suggestion of Torrey that the species has certain characteristics which ally it to *Tradescantia* and *Commelina* and recognizing the fact that it was assigned to *Tinantia* more than forty years ago, I propose a sort of hybridization of these names, giving the new genus the name *Commelinantia*. The generic description which follows is made broad enough to include some of the distinctive characters of *T. Pringlei*, acting on the probability that this species will ultimately be assigned to the new genus.

COMMELINANTIA gen nov.

Annual succulent plants, somewhat resembling species of *Commelina*: stems 2–8 dm. long, erect, ascending, or decumbent.

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* Since I began the study of this species with the view of determining the propriety of retaining it in *Tinantia*, I have learned that Dr. J. K. Small had decided to segregate it as a distinct genus in the next edition of his Flora of the Southeastern United States.

glabrous, much branched at maturity, the branches ascending, breaking through the close-fitting leaf-sheaths: *basal leaves* 0.5–3.5 dm. long, acute or acuminate, smooth or slightly pubescent with a few long hairs, appearing in early winter after the fall rain; *lower cauline leaves* resembling the basal leaves, 0.5–2.5 dm. long, the petiole arising from the closed sheath; *upper cauline leaves* generally shorter and broader than the lower; *inflorescence* a simple scorpoid, peduncled raceme, terminating branches and stems (or sometimes axillary and reduced to a single flower); *flowers* one or more (usually), each subtended by a small ovate bract; *calyx* of three similar, green, ovate, imbricated, persistent sepals; *corolla* showy, the petals equal or very unequal; *stamens* six, all fertile but dissimilar in size and in degree of pubescence; *ovary* oblong, three-celled, with two superimposed ovules in each cell, the stigma capitate; *capsule* loculicidally three-valved, the seeds greyish brown with copious endosperm surrounding the transverse embryo.

Commelinantia anomala (Torr.) comb. nov.

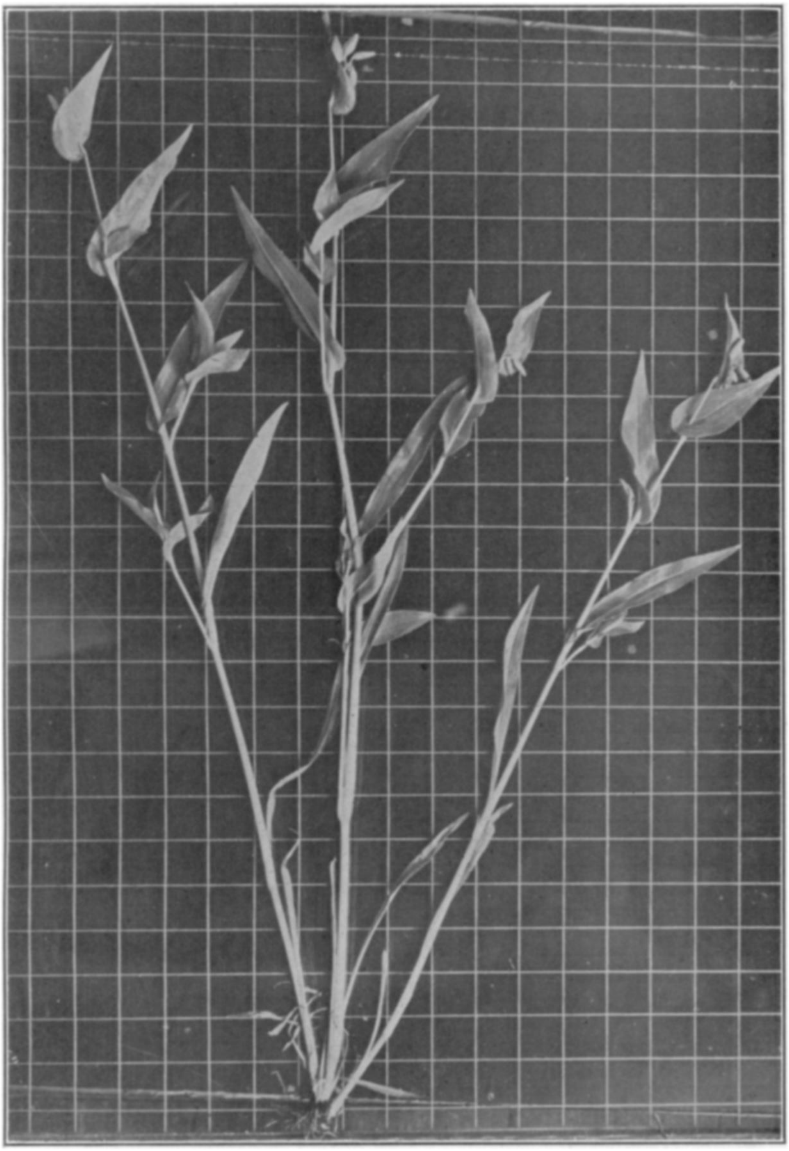
Tradescantia anomala Torr. U. S. & Mex. Bound. Bot. 225. 1859.

Tinantia anomala C. B. Clarke; De Candolle, Monog, Phaner. 3: 287. 1881.

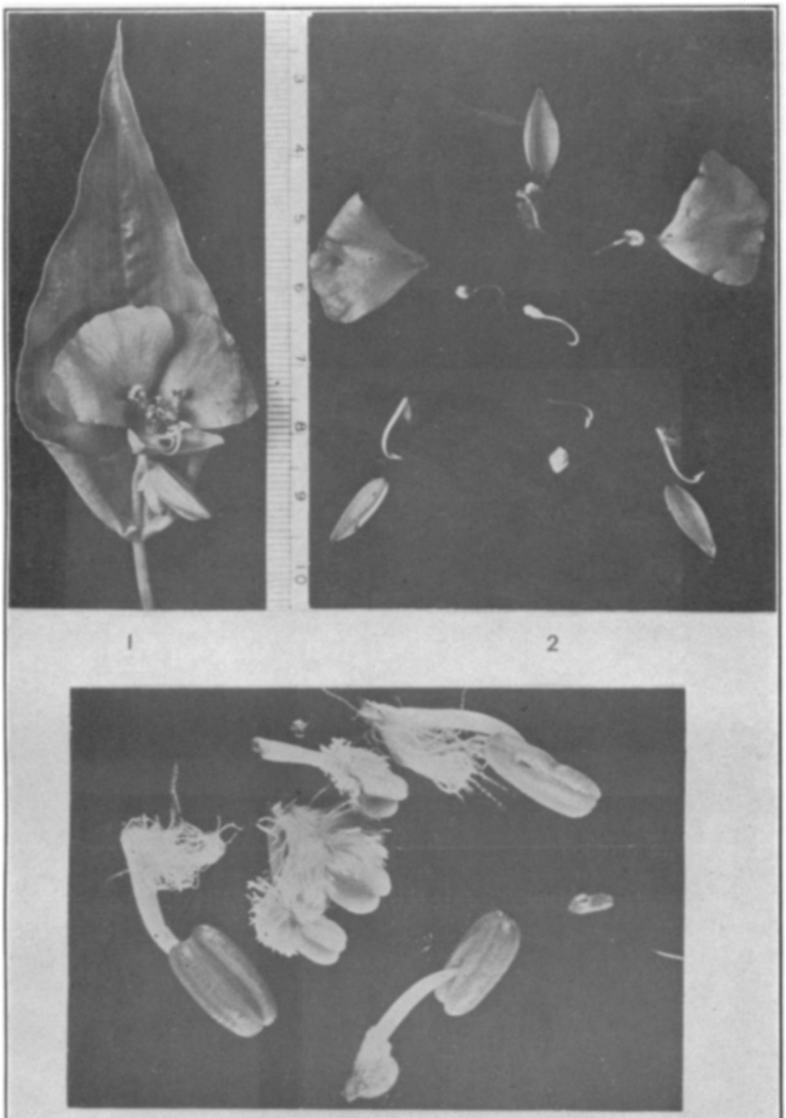
Pea green, usually glaucescent throughout: *stems* clustered, at first simple but later much branched, more than one branch frequently arising at a single node (especially in the upper part of a stem late in the season); *basal leaves* 2–3.5 dm. long, linear-spatulate, attenuate into long ciliate petioles below, rather pale green, glaucescent, slightly pubescent with a few long hairs above; *lower cauline leaves* 1.5–2.5 dm. long; *upper cauline leaves* sessile at the top of the sheaths or short-petioled, 0.5–2 dm. long, broadly or narrowly lanceolate or somewhat cordate and clasping at the base, acute or acuminate; *inflorescence* strictly terminal on stems and branches, subtended by a spathe strongly resembling the upper cauline leaves except in being erect, shorter (4–8 cm. long), broader, and strongly cordate-clasping at the base and in having no sheath; *flowers* three to sixteen or more, the bracts persistent, glabrous and green, each usually 3–5 mm. long; *sepals* keeled, slightly hooded, blunt, 9–12 mm. long, glandular-ciliate above the middle in the bud, a few apical cilia being persistent; *corolla* of two postero-lateral very showy lavender blue petals and a very small and inconspicuous anterior white petal, the showy petals almost rhomboid, 1.5–1.8 cm. long and somewhat broader than long, the small petal ovate-rhomboid, 3–4 mm. long, and longer than broad; *stamens* with filaments, of four distinct forms— (*a*) the posterior stamen densely bearded (except at the extreme apex, at the extreme base and in the lower two-thirds of the inner face) with showy lavender-purple hairs, (*b*) the two postero-lateral densely bearded above the middle with a collar of short lavender-purple yellow-tipped hairs, (*c*) the two antero-lateral bearded below the middle on the posterior margin with a tuft of short lavender hairs, and (*d*) the anterior stamen glabrous throughout—anthers of the three anterior stamens oblong, these stamens being manifestly larger throughout than the posterior stamens, the latter with orbicular anthers; *ovary* constricted in the middle, the stigma terminating a slender bent white style; *capsule* oblong, 6–8 mm. long; *seeds* 3–3.5 x 2–2.25 mm., rounded at one end, truncate at the other, with a curved longitudinal grooved hilum on the inner face, near the center of which lies an apparent eccentric perforation containing the minute embryo; *endosperm* not continuous but separated by an obscure commissure on one side and bearing a group of low broad, tuberculate ridges radiating from the sides of the embryo cavity, where it comes through to the outer surface.

In rich, moist, shaded soil of ravines and rocky hillsides of the Edwards Plateau, Texas; February to October, but principally March to May. Original localities, according to Torrey: "shady woods on the Blanco, Comale, and other rivers, Texas; *Wright*, (No. 699.) San Antonio, Texas; *Thurber*."

A comparison of Torrey's description with that submitted herewith will reveal several places wherein certain differences appear. These differences are: (1) in the height of the plant; (2) length of basal leaves; (3) number of flowers per raceme; (4) I can find no evidence of wings on the margin of the posterior filament and am at a loss to account for Torrey's mention of such structures unless he examined the filament in question only from the flat naked inner face of pressed material; (5) the ovary is uniformly three-celled with two superimposed ovules in each cavity, though failure of fertilization will of course cause abortion of any one or more of the six, with a consequent great variation in the appearance of the capsule; (6) the seeds, though superficially resembling those of *Tradescantia*, are different from any *Tradescantia* seeds I have examined in that the cavity containing the embryo extends entirely through the seed, the endosperm instead of being continuous around the embryo is separated by a commissure that extends to the embryo-cavity on one side, and the seeds of *C. anomala* are of greater size. Other points which are brought out in the description submitted herewith are not mentioned in that of Torrey.



COMMELINANTIA ANOMALA (TORR.) THARP



COMMELINANTIA ANOMALA (TORR.) THARP

I am indebted to Dr. F. W. Pennell, now of the Philadelphia Academy of Sciences, for helpful criticism and advice, for assistance in looking up the literature, and for access to a specimen of *Tinantia Pringlei.*

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Explanation of plates 10 and 11

PLATE 10

Plant of *Commelinantia anomala* (Torr.) Tharp, showing typical appearance of a flourishing specimen in bloom. The specimen is somewhat wilted causing the spathe to fold slightly. The linear-spatulate basal leaves, characteristic of plants during winter months, have disappeared by the time the stems have reached this stage of maturity. Scorpoid racemes seen in profile. Scale in inches.

PLATE 11

FIG. 1. Inflorescence of *C. anomala,* showing the position assumed by each flower as it comes into bloom. The spathe is somewhat wilted, causing it to roll slightly at the edges. Scale metric.

FIG. 2. Dissected flower to show relative size and general appearance of parts.

FIG. 3. Stamens from a bud several hours before anthesis; magnified eight diameters. The filaments have not attained nearly the length of those in an open flower, but the anthers are beginning to dehisce. Relative size and shape of mature anthers, and also the nature of the pubescence of filaments well shown.